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FEDERAL COMMUNICATIONS COMMISSION

FCC MAIL ROOM

Washington, DC 20554

In the Matter of

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Allocation of Spectrum Below

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ET Docket No. 94-32

5 GHz Transferred from

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Federal Government Use

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COMMENTS OF ROCKWELL INTERNATIONAL CORPORATION

Pursuant to Section 1.415 of the Federal Communications Commission ("the Commission") Rules and Regulations, Rockwell International Corporation ("Rockwell") hereby submits an original and nine copies of Comments on the Notice of Proposed Rulemaking ("NPRM") regarding the Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use.

INTRODUCTION

Rockwell is a manufacturer of a wide variety of communications equipment including products for Fixed and Mobile Radio Services and specialized microelectronics for communications devices operating under Section 15.247 of the Commission's Rules and Regulations. Rockwell's comments are limited to questions regarding use of the 2402 - 2417 MHz band as discussed in paragraphs 18 and 19 and appendix D of the NPRM. Rockwell believes that robust and innovative low power communications services and products will make the most efficient and competitive use of the 2402 - 2417 MHz band and recommends the Commission allocate the 2402 - 2417 MHz band to unlicensed devices complying with Section 15.247 on a primary basis.

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## **DISCUSSION**

Rockwell believes that the public will be better served by the primary allocation of the 2402 - 2417 MHz band to unlicensed low power devices, rather than to traditional licensed service. Unlicensed operations of current and planned applications authorized under 15.247 of the Commission's Rules and Regulations will provide the greatest range of market-driven communications services and products to the public in the 2402 - 2417 MHz band. Despite low power, these unlicensed applications, using spread spectrum RF techniques, are robust and versatile and consequently ideal for this band.

### **Unlicensed Applications in the 2402 - 2417 MHz Band**

Low power unlicensed applications make efficient use of the 2402 - 2417 MHz band as a part of the larger 2400 MHz industrial scientific and medical ("ISM") band. Under Section 15.247 unlicensed devices use low power (maximum one watt transmitted power) thereby allowing them to achieve maximum rates of frequency reuse. Using spread spectrum RF techniques, these applications are able to avoid interference from ISM equipment, including microwave ovens. The 2402 - 2417 MHz band is a relatively clean sub-band of the 2400 MHz ISM band and, therefore, crucial to unlicensed operation in locations where, and at times when, interference from ISM operation is prevalent in the rest of the 2400 MHz band. In effect, the 2402 - 2417 MHz band acts as a safe haven allowing viable low power spread spectrum use of the entire 2400 MHz band. Without this key safe haven, reliable use of the entire 2400 MHz ISM band by unlicensed devices would be limited by the proximity and power of ISM signals.

Hence, the 2402 - 2417 MHz band is critical for numerous low power Part 15 technologies and applications. The uses and public benefits of existing Part 15

devices and services are well known to the Commission through other proceedings including the ongoing Automatic Vehicle Monitoring ("AVM") proceeding.<sup>1</sup> Briefly, Part 15 applications include consumer devices such as cordless telephones that bring the unique flexibility of RF communication directly to the public, broadband networks that offer low cost network access and diverse utility and gas applications that remotely read meters and manage gas and power distribution to increase efficiency. As the NPRM acknowledged, the Commission has sought to foster the growth of Part 15 use in the 2400 MHz ISM band in the past.<sup>2</sup> Part 15 applications are already operating in the band today. Given the crowded conditions and the potential of introduction of licensed AVM services in the 902 - 928 MHz ISM/ Part 15 band, manufacturers and users are looking to the 2400 MHz ISM band to implement innovative unlicensed products and services.

### **The Wireless LAN Standard**

As a number of parties to this proceeding have stated, the Institute of Electrical and Electronics Engineers, Inc. ("IEEE") which is nearing completion of its wireless local area network (LAN) standard, 802.11, is one noteworthy industry group now looking to the 2400 MHz band.<sup>3</sup> The 802.11 standard will foster high volume production of low cost RF devices authorized under Section 15.247 for computer networking. The resulting applications have the potential not only to profoundly affect local area data communications, but also the basic organization of today's workplace. These applications might eventually produce widespread portable networking and completely flexible information systems solutions to support the "virtual office" of the future. Rockwell believes unhindered unlicensed use of the 2402 - 2417 MHz band under the technical rules of Section 15.247 is crucial to the success of the 802.11 standard and

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<sup>1</sup>FCC PR Docket 93-61.

<sup>2</sup>See footnote no. 31 on page D-6 of the Notice of Proposed Rulemaking, FCC 94-272.

<sup>3</sup>Comments of Apple Computer, Inc., 6/15/94, page 2 and Comments of AT&T, 6/15/94, page 3.

the many benefits that it can offer.

## **Inter-Service Sharing**

Rockwell agrees with AT&T's "alternative" proposal in its Comments to the Notice of Inquiry ("NOI") that new services could be allowed to enter the 2402 - 2417 MHz band under the technical rules in Section 15.247.<sup>4</sup> It is Rockwell's position that all RF communications services in the 2402 - 2417 MHz band, with the exception of amateur services, should be subject to the technical rules in Section 15.247 and other relevant Part 15 rules including the appropriate equipment authorization process therein prescribed. Under this proposal, additional authorization or licensing of services in the 2402 - 2417 MHz band would not be necessary. Further, as GEC Plessey emphasizes in its Comments to the NOI, Part 15 type devices can be used in the 2400 MHz ISM worldwide.<sup>5</sup> By allocating the 2402 - 2417 MHz band to unlicensed devices and services, the Commission will not only serve the public by encouraging the development of valuable services in the United States, it will also help foster a competitive export industry.

Rockwell supports co-primary status for amateur radio services in the 2402 - 2417 MHz band. As AT&T notes in its NOI Comments, amateur operations are rarely collocated with the type of unlicensed applications planned for the 2402 - 2417 MHz band.<sup>6</sup>

Rockwell believes that allocating other more traditional RF services for widespread use in the 2402 - 2417 MHz band will diminish the viability of unlicensed communications across the entire 2400 MHz band. In its Comments on the NOI, the Association of

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<sup>4</sup>Comments of AT&T, 6/15/94, page 3.

<sup>5</sup>Comments of GEC Plessey Semiconductors, Inc., 6/14/94, page 2.

<sup>6</sup>Comments of AT&T, 6/15/94, page 2.

Public-Safety Communications Officials-International (APCO), one of the few strong advocates of allocating licensed service in 2402 - 2417 MHz band, suggested using higher power levels, spread spectrum techniques and geographic constraints to overcome spurious ISM noise and increase reliability in the 2402 - 2417 MHz band.<sup>7</sup> However, APCO's Comments offered no details, such as the power levels necessary to overcome ISM noise, calling on the Commission and industry to consider the matter. Rockwell believes the use of higher, but to date unspecified, power levels in order to overcome ISM noise could substantially diminish the reliability of low power devices by destroying the 2402 - 2417 MHz safe haven. Further, depending on the power levels needed, the in-band spurious emissions created by a high power solution to ISM interference might itself preclude the Commission's original objective - the implementation of substantially competitive service.

Rockwell acknowledges spectrum needs of the public safety community and other private users and urges the Commission to continue addressing those needs. However, given the special circumstances in the 2400 ISM band, Rockwell believes that unhindered unlicensed use of the 2402 - 2417 MHz band will yield the greatest public benefits. Further, Rockwell submits that the Commission need not attempt to create conditions in the 2402 - 2417 MHz band that are hospitable to traditional licensed services in order to promote competitive communications. The current Part 15 rules already ensure that a great many applications are efficiently implemented in concert through high frequency reuse. Further, because the Part 15 rules covering the 2402 - 2417 MHz band are service-neutral, successful applications are and will continue to be market-driven. For example, the widespread interoperability sought by the IEEE in its 802.11 standard will only be implemented in the band based on the decisions of consumers, manufacturers and providers instead of regulators.

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<sup>7</sup>Comments of APCO, 6/15/94 page 6. Also see the Notice of Proposed Rulemaking, FCC 94-272 (page D-7).

## CONCLUSION

Unhindered unlicensed use of the 2402 - 2417 MHz band will allow viable use of the entire 2400 MHz ISM band by a wide range of low power spread spectrum communications services and products including those complying with the soon to be finalized IEEE 802.11 standard. Rockwell believes that the public benefits yielded by the aggregate of these services and products will far exceed those produced if a more traditional service were to be allocated in what the NPRM described as the "challenging environment" of the 2402 - 2417 MHz band. In order to maximize public benefits and promote spectral efficiency, Rockwell urges the Commission to assign unlicensed service authorized under Section 15.247 primary status in the 2402 - 2417 MHz band.

Respectfully Submitted,

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By 

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